Name: _____ Class: _____ Date: _____

Percent Increase or Decrease/Simple Interest

A percent increase is the amount that a quantity has increased based on a percent of the original amount. A percent decrease is the amount that a quantity has decreased based on a percent of the original amount. An equation that represents either situation is:

amount of increase or decrease = (% change)(original amount)

For additional information see the Math Notes box in Lesson 7.1.1 of the *Core Connections, Course 2* text.

Example 1

A town's population grew from 1879 to 7426 over five years. What was the percent increase in the population?

- Subtract to find the change:

$$7426 - 1879 = 5547$$

- Put the known numbers in the equation:

$$5547 = (x)(1879)$$

- The scale factor becomes x, the unknown:

$$\frac{5547}{1879} = x$$

- Divide: $x = \frac{5547}{1879} \approx 2.952$
- Change to percent: $x = 295.2\%$

The population increased by 295.2%.

Example 2

A sumo wrestler retired from sumo wrestling and went on a diet. When he retired he weighed 385 pounds. After two years he weighed 238 pounds. What was the percent decrease in his weight?

- Subtract to find the change:

$$385 - 238 = 147$$

- Put the known numbers in the equation:

$$147 = (x)(385)$$

- The scale factor becomes x, the unknown:

$$\frac{147}{385} = x$$

- Divide: $x = \frac{147}{385} \approx 0.382$
- Change to percent: $x \approx 38.2\%$

His weight decreased by about 38.2 %.

Solve the following problems.

1. Forty years ago gasoline cost \$0.30 per gallon on average. Ten years ago gasoline averaged about \$1.50 per gallon. What is the percent increase in the cost of gasoline?

2. When Spencer was 5, he was 28 inches tall. Today he is 5 feet 3 inches tall. What is the percent increase in Spencer's height?

3. The cars of the early 1900s cost \$500. Today a new car costs an average of \$27,000. What is the percent increase of the cost of an automobile?

6. In 1906 Americans consumed an average of 26.85 gallons of whole milk per year. By 1998 the average consumption was 8.32 gallons. What is the percent decrease in consumption of whole milk?

In Course 2 students are introduced to simple interest, the interest is paid only on the original amount invested. The formula for simple interest is: $I = Prt$ and the total amount including interest would be: $A = P + I$.

Example 1

Wayne earns 5.3% simple interest for 5 years on $3000. How much interest does he earn and what is the total amount in the account?

Put the numbers in the formula $I = Prt$.	I = 3000(5.3%)5
Change the percent to a decimal.	= 3000(0.053)5
Multiply.	= 795 Wayne would earn $795 interest.
Add principal and interest.	$3000 + $795 = $3795 in the account

Solve the following problems.

1. Tong loaned Jody $50 for a month. He charged 5% simple interest for the month. How much did Jody have to pay Tong?

2. Jessica's grandparents gave her $2000 for college to put in a savings account until she starts college in four years. Her grandparents agreed to pay her an additional 7.5% simple interest on the $2000 for every year. How much extra money will her grandparents give her at the end of four years?

3. David read an ad offering $8\frac{3}{4}\%$ simple interest on accounts over $500 left for a minimum of 5 years. He has $500 and thinks this sounds like a great deal. How much money will he earn in the 5 years?

4. Javier's parents set an amount of money aside when he was born. They earned 4.5% simple interest on that money each year. When Javier was 15, the account had a total of $1012.50 interest paid on it. How much did Javier's parents set aside when he was born?

5. Kristina received $125 for her birthday. Her parents offered to pay her 3.5% simple interest per year if she would save it for at least one year. How much interest could Kristina earn?